REMARKS

The January 30, 2008 Final Office Action was based upon pending Claims 23-26, 29 and 31-45. The Examiner rejected Claims 23-26, 29 and 31-45. By this amendment, Applicant has amended Claims 23, 31, 37 and 43-45. Reconsideration of the application, as amended, is respectfully requested.

I. Claim Rejections

The Examiner provisionally rejected Claims 23-25 and 29 under the judicially-created doctrine of obviousness-type double patenting as being unpatentable over Claims 9-14 of Applicant's co-pending U.S. Application No. 10/760,126 in view of U.S. Patent No. 6,246,214 issued to Oglesbee ("the Oglesbee patent").

The Examiner rejected Claims 23-26, 29, 31, 34-37, 40, 41 and 43-45 under 35 U.S.C. § 103(a) as being unpatentable over the Oglesbee patent in view of U.S. Patent No. 5,621,299 issued to Krall ("the Krall patent").

The Examiner also rejected Claim 32 under 35 U.S.C. § 103(a) as being unpatentable over the Oglesbee patent in view of the Krall patent and U.S. Patent No. 5,978,236 issued to Faberman, et al. ("the Faberman patent").

In addition, the Examiner rejected Claim 33 under 35 U.S.C. § 103(a) as being unpatentable over the Oglesbee patent in view of the Krall patent and U.S. Patent No. 6,170,062 issued to Henrie ("the Henrie patent").

Furthermore, the Examiner rejected Claims 38 and 39 under 35 U.S.C. § 103(a) as being unpatentable over the Oglesbee patent in view of the Krall patent and U.S. Publication No. 2002/0021164 to Fugate, et al. ("the Fugate publication").

Finally, the Examiner rejected Claim 42 under 35 U.S.C. § 103(a) as being unpatentable over the Oglesbee patent in view of the Krall patent and U.S. Patent No. 5,786,682 issued to Aiken ("the Aiken patent").

II. Supplemental Information Disclosure Statement

Submitted concurrently herewith is a Supplemental Information Disclosure Statement citing references from a related co-pending application. While the Applicant does not believe

that these references will affect the patentability of the pending claims, Applicant respectfully requests the Examiner to consider the pending claims in connection with these references in order to make them of record.

III. Provisional Double Patenting Rejection of Claims 23-25 and 29

Applicant acknowledges the provisional double patenting rejection; however, since no claims in the co-pending application have been allowed, a terminal disclaimer is not yet appropriate. Applicant will submit a terminal disclaimer when the identified claims have been allowed in both applications if the claims have not otherwise been amended to overcome the double patenting rejection.

IV. Rejection of Claims 23-26, 29 and 31-45 under 35 U.S.C. § 103(a)

The Examiner rejected Claims 23-26, 29, 31, 34-37, 40, 41 and 43-45 under 35 U.S.C. § 103(a) as being unpatentable over the Oglesbee patent in view of the Krall patent. The Examiner also rejected Claim 32 under 35 U.S.C. § 103(a) as being unpatentable over the Oglesbee patent in view of the Krall patent and the Faberman patent. In addition, the Examiner rejected Claim 33 under 35 U.S.C. § 103(a) as being unpatentable over the Oglesbee patent in view of the Krall patent and the Henrie patent. The Examiner further rejected Claims 38 and 39 under 35 U.S.C. § 103(a) as being unpatentable over the Oglesbee patent in view of the Krall patent and the Fugate publication. Finally, the Examiner rejected Claim 42 under 35 U.S.C. § 103(a) as being unpatentable over the Oglesbee patent in view of the Krall patent and the Aiken patent.

A. Independent Claim 23

Focusing in particular on Claim 23 and the embodiments shown in Figures 2 and 4, a method for controlling battery power comprises selectively providing a first external power source (e.g., an AC adapter) 228 or a second external power source (e.g., a USB interface) 230 to a device coupled to a system power terminal (V-LOAD) as shown in Figure 2. Referring to Figure 4, an internal battery is coupled to the system power terminal (V-LOAD) via a series-connected bi-directional transistor 400. The bi-directional transistor comprises a first terminal connected to the system power terminal, a second terminal connected to a positive terminal of the internal battery (V-BATTERY), a configurable body terminal, and a control terminal.

The method compares a voltage at the system power terminal with a voltage at the positive terminal of the internal battery to control connection of the configurable body terminal. The configurable body terminal is connected to the first terminal when the system power terminal has a higher voltage than the positive terminal of the internal battery and connected to the second terminal when the positive terminal of the internal battery has a higher voltage than the system power terminal. By way of example, Figure 4 shows a comparator 406 comparing the voltage at the system power terminal with the voltage at the positive terminal of the internal battery and switches 402, 404 controlling connections of the configurable body terminal in response to an output of the comparator 406.

The method also comprises sensing a voltage difference between the system power terminal and a positive terminal of the internal battery and generating a feedback control signal based on the voltage difference and a voltage level at the control terminal of the bi-directional transistor. For example, a battery control loop 304 carries out these functions and has input terminals coupled to the system power terminal, the positive terminal of the internal battery and the control terminal of the bi-directional transistor.

The method further comprises translating the feedback control signal into a linearly adjustable voltage for driving the bi-directional transistor. For example, a pass element driver 302 receives the feedback control signal from the battery control loop 304 and generates the linearly adjustable voltage for the control terminal of the bi-directional transistor. The method determines a charging mode of operation when the voltage difference indicates that the system power terminal has a higher voltage than the positive terminal of the internal battery by a first predefined amount and determines a discharging mode of operation when the voltage difference indicates that the system power terminal has a lower voltage than the positive terminal of the internal battery by a second predefined amount.

During the charging mode, the internal battery is charged by linearly regulating the bi-directional transistor with the linearly adjustable voltage at the control terminal of the bi-directional transistor to conduct a charging current in a first direction from the system power terminal to the positive terminal of the internal battery. During the discharging mode, the internal battery is discharged by linearly regulating the bi-directional transistor with the linearly adjustable voltage at the control terminal of the bi-directional transistor to conduct a discharging

current in a second direction from the positive terminal of the internal battery to the system power terminal. The level of current provided to the internal battery during the charging mode or current supplied by the internal battery during the discharging mode varies with the level of the linearly adjustable voltage at the control terminal of the bi-directional transistor.

None of the cited references discloses a configuration that couples an internal battery to a system power terminal via a series-connected bi-directional transistor with a first terminal connected to the system power terminal, a second terminal connected to a positive terminal of the internal battery, a control terminal, and a configurable body terminal that is controllable to connect to the system power terminal or the positive terminal of the internal battery. Referring to Figure 2 of the Oglesbee patent in particular, a safety transistor 203 has a first terminal coupled to an input terminal 208, a second terminal coupled to an output terminal 210 of a battery cell 201, and a control terminal coupled to a charge regulator system 205 and a discharge regulator system 234. The safety transistor 203 does not show a configurable body terminal.

Because the references cited by the Examiner do not disclose, teach or suggest a bi-directional transistor with a configurable body terminal as described in Claim 23, Applicant asserts that Claim 23 is patentably distinguished over the cited references and Applicant respectfully requests allowance of Claim 23.

B. Dependent Claims 24-26, 29, 40-43

Claims 24-26, 29 and 40, which depend from Claim 23, are believed to be patentable for the same reasons articulated above with respect to Claim 23, and because of the additional features recited therein.

C. Independent Claim 31

Claim 31 is directed to a method of controlling battery power. The method comprises selectively providing an external primary power source and an external secondary power source to a system power terminal of a device with an internal battery. The internal battery is coupled to the system power terminal using a bi-directional transistor with a control terminal, a first terminal connected to the system power terminal, a second terminal connected to the internal battery, and a configurable body contact that is connected to the system power terminal during a charging mode and connected to the internal battery during a discharging mode.

The method further comprises generating a feedback control signal based on a voltage at the control terminal of the bi-directional transistor and a voltage difference between the system power terminal and a positive terminal of the internal battery. The method determines whether the bi-directional transistor operates in the charging mode or the discharging mode based on the voltage difference between the system power terminal and the positive terminal of the internal battery. A linearly adjustable voltage is generated based on the feedback control signal. The linearly adjustable voltage drives the control terminal of the bi-directional transistor to regulate current conducted by the bi-directional transistor to charge the internal battery during the charging mode and to discharge the internal battery during the discharging mode. The level of current provided to the internal battery during the charging mode or current supplied by the internal battery during the discharging mode is determined by the level of the linearly adjustable voltage at the control terminal of the bi-directional transistor.

None of the cited references discloses, teaches or suggests coupling an internal battery to a system power terminal using a bi-directional transistor with a control terminal, a first terminal connected to the system power terminal, a second terminal connected to the internal battery power, and a configurable body contact that is connected to the system power terminal during a charging mode and connected to the internal battery during a discharging mode. Thus, Applicant asserts that Claim 31 is not obvious in view of the Oglesbee patent and the Krall patent. Applicant respectfully submits that Claim 31 is patentably distinguished over the cited references and Applicant respectfully requests allowance of Claim 31.

D. Dependent Claims 32-39

Claims 32-39, which depend from Claim 31, are believed to be patentable for the same reasons articulated above with respect to Claim 31, and because of the additional features recited therein.

E. Independent Claim 44

Claim 44 is directed to a method for controlling battery power. The method comprises coupling a battery to a system power terminal via a series-connected bi-directional transistor. The bi-directional transistor comprises a first terminal connected to the system power terminal, a second terminal connected to the battery, a control terminal, and a configurable body contact that is connected to the system power terminal during a charging mode and connected to the battery

during a discharging mode. The method also comprises detecting a voltage difference between the system power terminal and a positive terminal of the battery, generating a feedback control signal based on the voltage difference and a voltage at the control terminal of the bi-directional transistor, and generating a linearly variable voltage based on the feedback control signal to drive the bi-directional transistor.

The linearly variable voltage is applied to the control terminal of the bi-directional transistor to charge or to discharge the battery. The voltage difference between the system power terminal and the positive terminal of the battery determines whether the bi-directional transistor operates in the charging mode or the discharging mode. The feedback control signal determines the level of current conducted by the bi-directional transistor.

Because the references cited by the Examiner do not disclose, teach or suggest coupling a battery to a system power terminal via a series-connected bi-directional transistor with a configurable body contact that connects to the system power terminal during a charging mode and to the battery during a discharging mode, Applicant asserts that Claim 44 is not obvious in view of the Oglesbee patent and the Krall patent. Applicant therefore respectfully submits that Claim 44 is patentably distinguished over the cited references and Applicant respectfully requests allowance of Claim 44.

F. Dependent Claim 45

Claim 45, which depends from Claim 44, is believed to be patentable for the same reasons articulated above with respect to Claim 44, and because of the additional features recited therein.

V. No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, the Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. The Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history

shall not reasonably infer that the Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

VI. Conclusion

In view of the foregoing, the present application is believed to be in condition for allowance, and such allowance is respectfully requested. If further issues remain to be resolved, the Examiner is cordially invited to contact the undersigned such that any remaining issues may be promptly resolved. Also, please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

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By: 

Sharon S. Ng
Registration No. 53,383
Attorney of Record
Customer No. 20995
(949) 760-0404

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